FASTPROP SCENE FOR EADTB GRIB
MULTI-RESOLUTION ANALYSIS (U)

8351-22296-3/I-313BM

≈ 500,000 PUFF OBJECTS (10-100 m DIAMETER

APPROXIMATE
AGGREGATED
OBJECT SIZE
(CLOUD)

8° LATITUDE
≈ 880 km

6° LONGITUDE ≈ 660 km

GRIB BUFR FILES
10 km RESOLUTION - 100 kbytes
4 km RESOLUTION - 800 kbytes
1 km RESOLUTION - 16 Mbytes
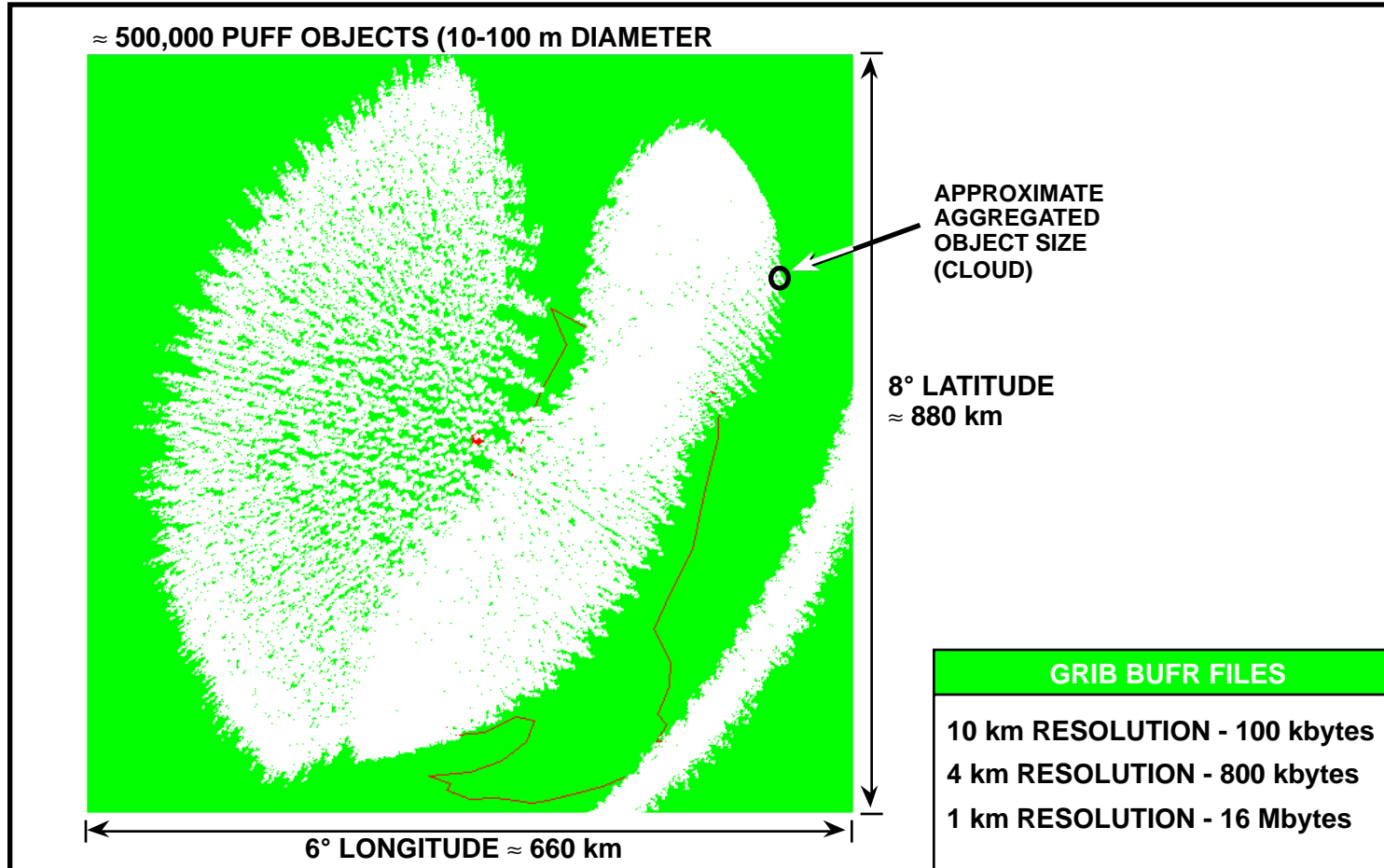
8351--23596-05/I-313

GRIDDED WEATHER SCENE DATA (U)

- **NUMBER OF LATITUDE AND LONGITUDE POINTS IN GRID**

- **SPACING BETWEEN POINTS IN GRID**

- **WEATHER CHARACTERISTICS AT EACH GRID POINT (11 PARAMETERS)**
  - **GROUND LEVEL**
    - △ **TEMPERATURE (deg Kelvin)**
    - △ **PRESSURE (Pascals)**
    - △ **RELATIVE HUMIDITY (%)**
    - △ **WIND SPEED (m/sec)**
    - △ **WIND DIRECTION (deg East of North)**
    - △ **RAIN RATE (kg/m^2/sec)**
    - △ **SNOW RATE (kg/m^2/sec)**
    - △ **SNOW DEPTH (m)**

  - **CLOUD LEVEL**
    - △ **CLOUD BASE HEIGHT (m)**
    - △ **CLOUD TOP HEIGHT (m)**
    - △ **CLOUD LIQUID WATER CONTENT (kg/m^2)**

* (TBD currently set to Zero)

MEASURES OF MERIT FOR IMPACT OF SCENE RESOLUTION ON ENGAGEMENT SIMULATION (U)

8351-22296-8/i-313CVB

- **MISSION PERFORMANCE**
  - KILLS
  - TRAFFIC HANDLING

- **SYSTEM PERFORMANCE**
  - DETECTION STATISTICS
  - TRACK STATISTICS

- **PHYSICS**
  - LOS INTERSECTIONS WITH WEATHER OBJECTS
  - TRANSMISSION STATISTICS

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MULTI-RESOLUTION SCENE ANALYSIS PLANS (U)

8351-22296-9/i-313CVB

4Q / FY96 – **GENERATE GRIB FILES FOR SCENE RESOLUTIONS OF 0.1, 1, 4, AND 10 km**

4Q / FY96 – **COMPUTE MEASURES OF MERIT (MOMs) WITH EADTB SCENARIOS FOR DIFFERENT SCENE RESOLUTIONS**

1Q / FY97 – **PRELIMINARY ASSESSMENT OF MOMs SENSITIVITY TO RESOLUTION**

2Q / FY97 – **FASTPROP / EADTB RUNTIME INTERFACE DEMONSTRATION**

3Q / FY97 – **ASSESS HIGH RESOLUTION FASTPROP SCENE IMPACT ON EADTB MOMs**

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SUMMARY (U)

8351-20796-28/i-313RD

- **FASTPROP GENERATES WEATHER SCENES AT MULTIPLE LEVELS OF RESOLUTION**
- **CRITICAL ELEMENTS TO MULTI-RESOLUTION CAPABILITY**
  - **STATISTICAL HIERARCHICAL REPRESENTATION OF WEATHER SCENE**
  - **STOCHASTIC INDEXING**
  - **LOS INTERSECTION ALGORITHMS**
  - **EFFECTS TABLE LOOKUP WITH COMPUTED INDICES**

- **FASTPROP RUNTIME DEMONSTRATED WITH EADSIM USER CONSTRUCTIVE SIMULATION**

- **ANALYSIS OF SCENE RESOLUTION IMPACT ON EADTB AND EADSIM MEASURES OF MERIT IN PROCESS**

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